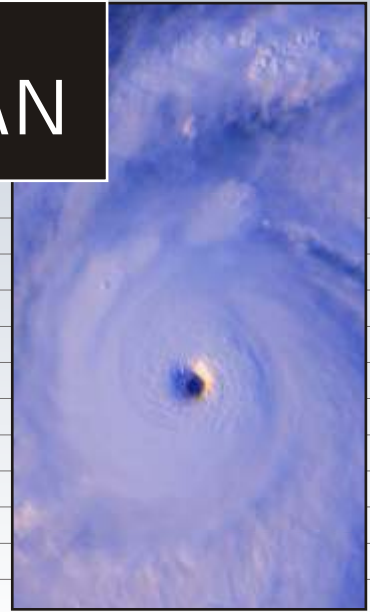


FACILITIES MASTER PLAN

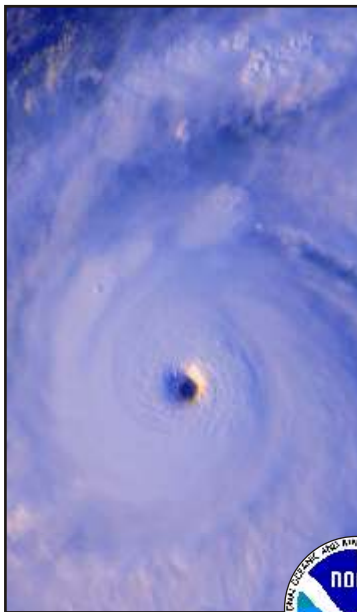
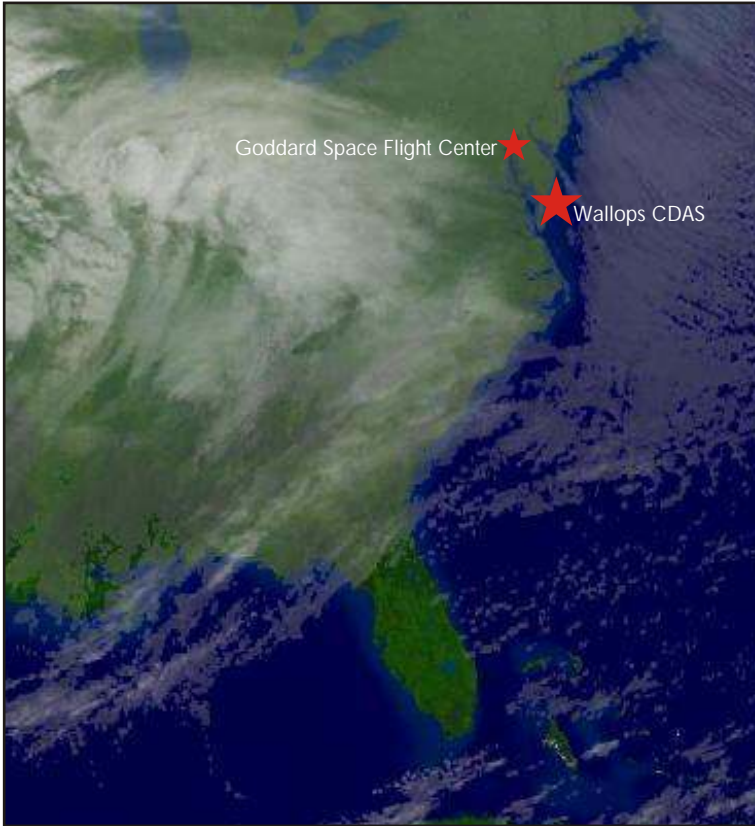


WALLOPS COMMAND AND DATA ACQUISITION STATION, VIRGINIA

U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
National Environmental Satellite, Data, and Information Service

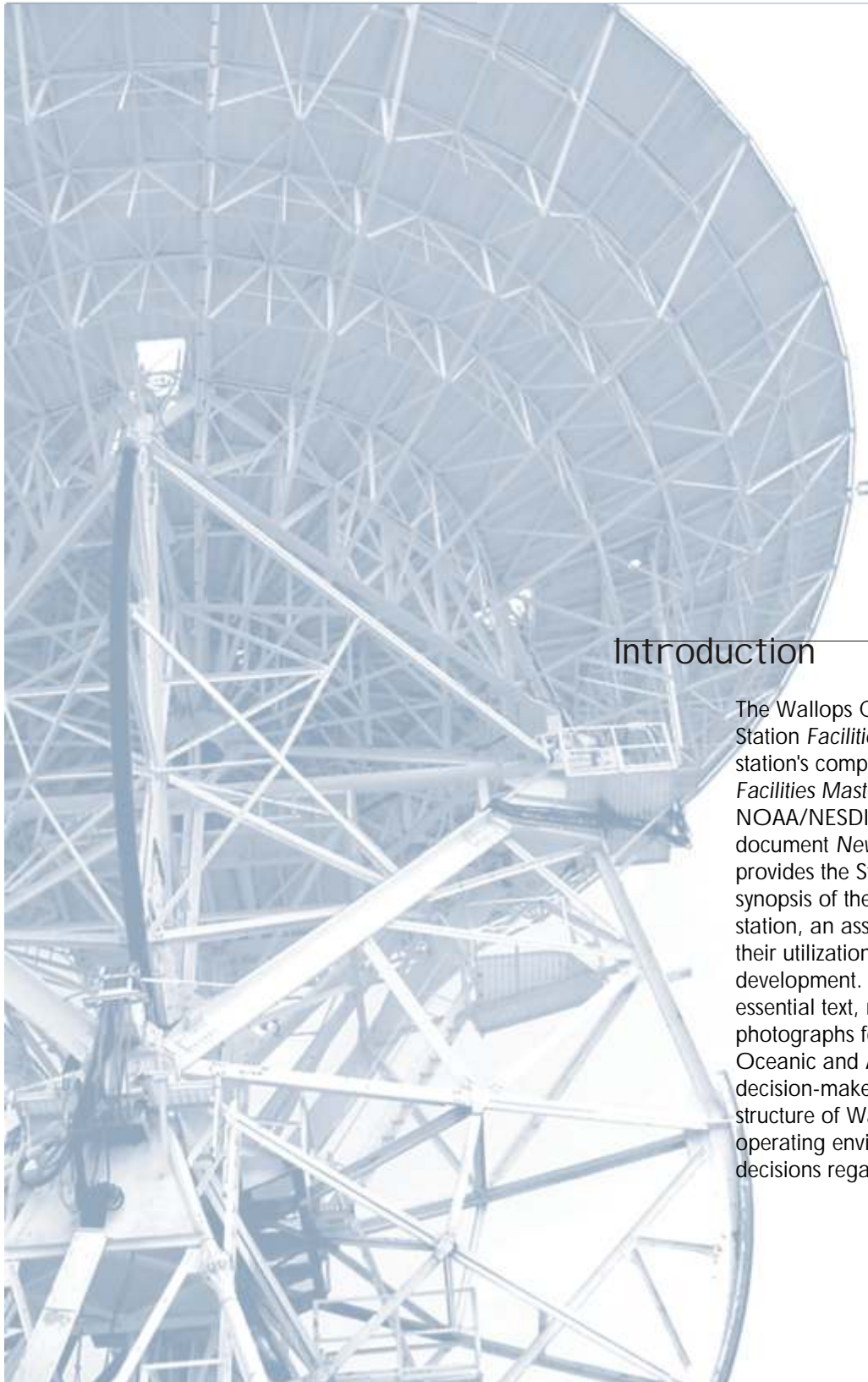


EXECUTIVE SUMMARY



Wallops CDAS Facilities Master Plan January 2004

Wallops CDAS Facilities Master Plan



Introduction

The Wallops Command and Data Acquisition Station *Facilities Master Plan* is the capstone of the station's comprehensive planning process. The *Facilities Master Plan* incorporates the NOAA/NESDIS strategic vision from the NOAA document *New Priorities for the 21st Century* and provides the Station and Project Managers with a synopsis of the factors affecting development of the station, an assessment of existing buildings and their utilization, and a framework for future development. Concise in format, it contains essential text, maps, graphics, charts, and photographs for station and higher level National Oceanic and Atmospheric Administration (NOAA) decision-makers to understand the character and structure of Wallops CDAS and the surrounding operating environment and to make informed decisions regarding station revitalization.

Wallops CDAS

NOAA/NESDIS Strategic Vision

To move NOAA into the 21st Century scientifically and operationally, in the same interrelated manner as the environment that we observe and forecast, while recognizing the link between the global economy and our planet's environment.



Wallops CDAS Mission

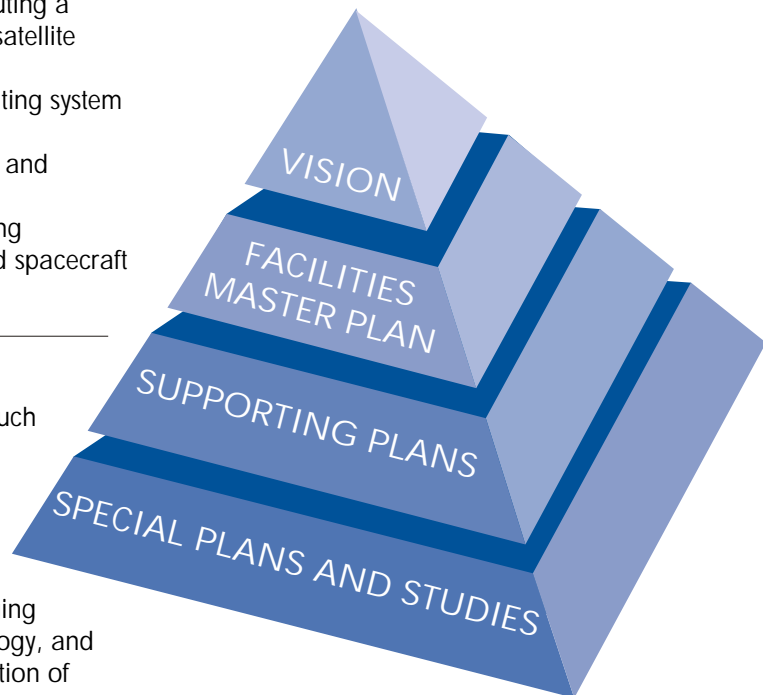
The Wallops CDAS main mission responsibilities are:

- Ensuring scheduled data flow from NOAA satellites to designated user subsystems.
- Executing spacecraft commands and schedules.
- Acquiring, maintaining, and distributing a continuous flow of meteorological satellite data.
- Planning, designing, and implementing system modifications.
- Testing and evaluating new systems and techniques.
- Assisting in developing and executing emergency procedures to safeguard spacecraft health and safety.

Wallops Goals And Objectives

Comprehensive planning for a station such as Wallops CDAS begins with management's vision that embodies a creative approach to the maintenance and development of the station's physical plant over the next 20 to 25 years. It accommodates new and changing missions as well as advances in technology, and defines the philosophy for and the direction of station development.

Wallops CDAS management's vision is reinforced by the *Facilities Master Plan*. While the plan spans the 20-25 year vision, it tends to focus on the more immediate years when future mission and other requirements can more readily be determined. The overall goal of this *Facilities Master Plan* is to: *ensure that Wallops CDAS facilities, infrastructure, and communications continue to support the vision of NOAA/NESDIS.*



Facilities Master Plan



Wallops Island Back Up Unit
at Goddard Space Flight Center



Partial View of Antenna Array, Wallops Island

Goal: Promote Excellence in NOAA/NESDIS Planning Process

Objectives:

- Integrate Facility Condition Assessment (FCA), Real Property Utilization Survey (RPUS), and *Facilities Master Plan* baseline existing conditions.
- Analyze Constraints & Opportunities to guide the plan.
- Consider a wide range of planning factors, alternatives, effective phasing and implementation measures.
- Utilize appropriate standards to set goals and benchmark progress and cost.
- Promote continuous planning.
- Use innovative electronic planning tools.

Goal: Develop a world-class CDAS

Objectives:

- Enhance mission capabilities.
- Plan and prepare for growth at Wallops CDAS or in the immediate vicinity.
- Configure facilities to support mission operation and growth.
- Eliminate space use shortcomings through relocation, renovation, and/or new construction.
- Correct deficiencies in infrastructure and facilities outlined in this *Facilities Master Plan*.
- Promote efficient operations and transportation/circulation.
- Improve vehicular circulation patterns on site.
- Provide for the physical security of the station.
- Ensure adequate force protection measures are included in new facility sites and design.
- Develop efficient infrastructure.

Goal: Promote excellence in the built environment

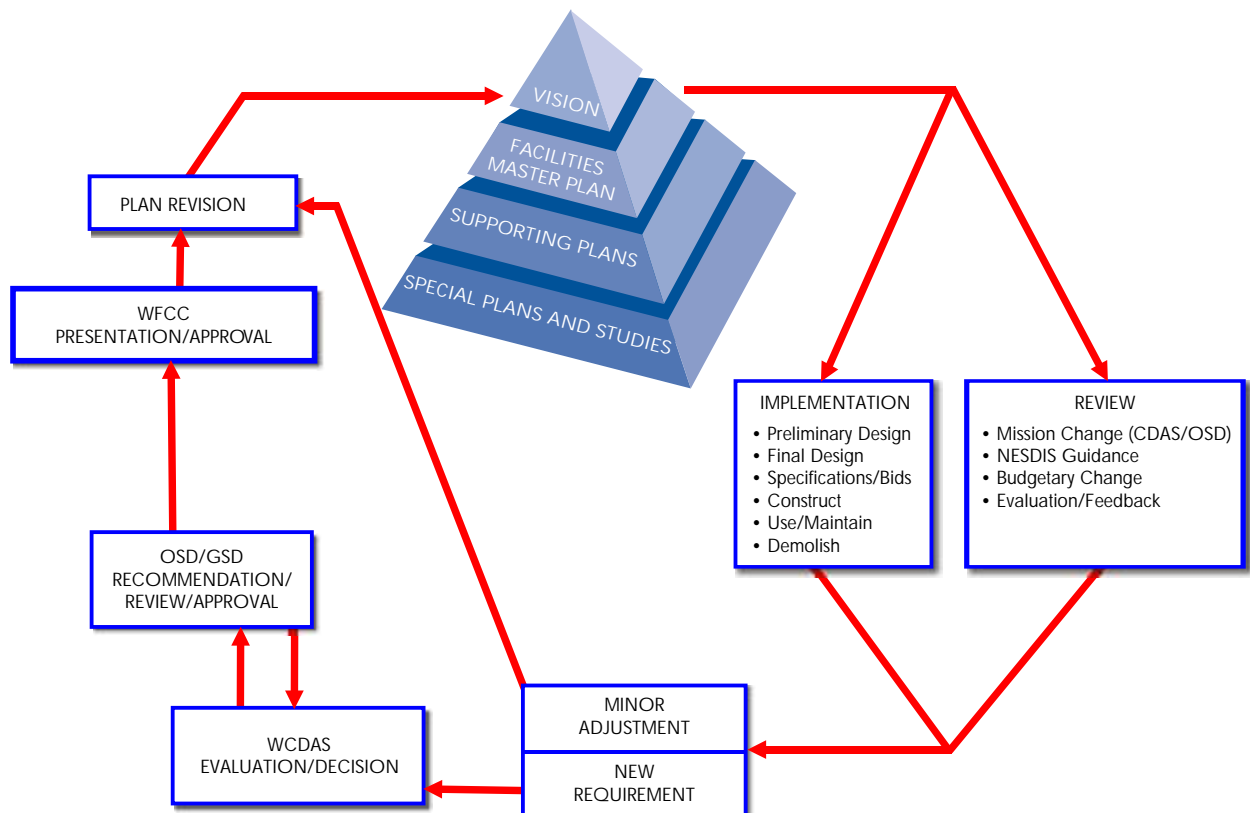
Objectives:

- Achieve facilities excellence.
- Implement "campus" plan.
- Promote good environmental stewardship.
- Implement life/safety enhancements.
- Provide quality facilities that ensure efficient, continuous operation of the site and proper quality of life care of employees.
- Expand facility-based mission capabilities.
- Implement quality architectural, landscape, and urban design standards and solutions through project design and construction.

Wallops CDAS

Facilities Master Plan Implementation, Maintenance, And Revision

The *Facilities Master Plan* is intended to be a “living document.” As such, it will require maintenance and revision as the mission, budget, and other conditions generate new planning requirements. Implementation of the plan is also an on-going task. Several agencies and individuals have direct input and/or responsibility for these activities. Wallops CDAS Station Manager has the most direct control; however, various other managers on the station provide input and guidance. Personnel from Office of Systems Development (OSD) - Ground Systems Division (GSD), Office of Satellite Operations (OSO), NOAA, Integrated Program Office (IPO), and NASA also provide direct and indirect support for the plan through development of mission objectives, planning for new satellites and ground equipment, and in specifying, procuring, installing, testing, and accepting new systems, subsystems, and major modifications to existing facilities.



Facilities Master Plan



History

The Wallops Command and Data Acquisition Station was built in 1965 on an original parcel of ten acres of land leased from NASA Wallops Island. The site was once part of a nine-hole golf course belonging to the U.S. Navy. The station became operational in January 1966, with a staff of 46 personnel. It was one of the few completely new technical government enterprises to be staffed entirely by government personnel from its inception.

Description

Wallops CDAS is a tenant on the National Aeronautics and Space Administration (NASA) 6,200 acre Wallops Flight Facility. It is located on the DELMARVA peninsula and the Eastern Shore of Virginia, bounded by the Atlantic Ocean on the east and the Chesapeake Bay on the West. It is a quiet place of great natural beauty with a rich history gracing the area with numerous historic homes, churches, museums, and landmarks that invite visitors to explore the past. Local communities stage major annual festivals (like the world-famous pony swim) and events to celebrate the heritage of the area. Accomack County (where Wallops CDAS is located) has undergone a 20 percent population rise in the 1990s but this rate has slowed in this century.

Satellite Support

Current on-going satellite support includes GOES I-M, Polar-Orbiting Environmental Satellites (POES)/NOAA, Geosynchronous Meteorology Satellite (METEOSAT) 7, MSG (METEOSAT Second Generation), and Advance Composition Explorer (ACE); with future missions including GOES - NO/P, GOES R, JASON 1, OSTM, GIFTS, Meteorological Ops (METOP), ACE-Follow On, and GEOSTORMS; and with potential future missions that might include Ocean Topography Experiment (TOPEX)/Poseidon, and Defense Meteorological Satellite Program (DMSP). Wallops CDAS will continue to be a focal point for NOAA satellite operations.

Annual Chincoteague Pony Swim



Assateague Island National Seashore

Wallops CDAS Back-Up Facility

Wallops CDAS has a back-up facility located at Goddard Space Flight Center, Greenbelt, Maryland, with an associated 16.4-meter antenna. This facility serves as the primary back-up for the east GOES satellite should Wallops CDAS go off-line. The facility's readiness is tested monthly by Wallops CDAS personnel.

Wallops CDAS



Constraints and Opportunities

There are very limited development opportunities on Wallops CDAS site due to the constraints below. Airfield height restrictions, antenna obscuration issues, the saturation of the site with existing antennas and facilities, and current land use pose the most severe constraints. Steep slopes and on-site drainage also restrict the development opportunities to an extent.

Wallops CDAS Constraints Summary		
Constraint	Status	Comment
<i>Natural Constraints</i>		
Climate and Weather	■	Wallops CDAS has a temperate climate
Water:		
Wetlands	■	Wetlands border the site to the north along Mosquito Creek
Surface Water	■	The surface waters in the vicinity of the site are saline to brackish and tidally influenced
Floodplains	■	The flood wave crest elevation is well below the maximum elevation of the developed portion of the site
Groundwater	■	Evaluations indicate that water quality is generally good
Stormwater	■	The natural stormwater drainage pattern of the site is directly north to Mosquito Creek or to several swales that discharge to the creek
Topography and Geology and Soils	■	There are some steep slope areas and erosion potential
Vegetation and Forests	■	Forested areas provide a buffer to the north
Wildlife	■	White-tailed deer, opossum, raccoons, gray squirrels, and numerous songbirds and other avian species inhabit the area within site boundaries
Threatened and Endangered Species	■	Surveys have found no resident federally listed endangered or threatened species on site
<i>Cultural Constraints</i>		
Historical and Archeological Sites	■	No effect on development
<i>Environmental Constraints</i>		
Hazardous Materials and Waste	■	All hazardous waste disposal operations and procedures for handling hazardous material are managed in accordance with applicable federal, state, and local regulations
Pest Management	■	There are no current pest management problems
Fuel Storage Tanks	■	Wallops fuel storage tanks meet all current state and federal regulations
Air Emissions	■	The site is in compliance with Virginia Department of Air Pollution Control regulations for all non -criteria pollutant emission rates
Wastewater Point Source Discharges	■	The site leach field is located in a prime developable area
Noise	■	The primary sources of noise are aircraft activities on NASA runways
<i>Operational Constraints</i>		
Airfield Height Restrictions	■	The airfield transitional surface dictates facility height restrictions
Health and Safety	■	Personnel operational hazards exist due to runway operations and explosives storage at WFF
Antenna Look Angles	■	Antenna operational envelopes create height limits for buildings and other vertical improvements
Electro-magnetic Radiation Zones	■	Zones limit inhabited facility siting
Quantity Distance Safety Arcs	■	Arcs limit inhabited facility siting
Radio Frequency Interference	■	There are no radio frequency noise or electromagnetic interference problems provided preemptive RF/EMI management measures continue to be implemented
Vibrations	■	No vibration problems exist due to NASA or other flight operations or heavy local traffic
Other:		
Ground Field	■	Field located in prime developable area
Geo-thermal Well	■	A capped, abandoned geothermal wellhead is located near the new truck turnaround point
RCRA Site	■	The site is north of any planned development
■	Major Constraint: development prohibited in affected areas.	
■	Minor Constraint: development permitted in affected areas with considerations.	
■	No constraint to development.	

Facilities Master Plan



Land Use

Wallops CDAS is located between two research runways at Wallops Flight Facility. The airfield and aircraft operations land uses also extend southward. Areas to the west support various communications capabilities and pyrotechnics/rocket motor storage to support the Wallops Launch Range. Most of the WFF research facilities are located to the southwest, separated from Wallops CDAS by the airfield. Other areas along Mosquito Creek are preserved as open space. Essentially, the surrounding land uses at the WFF comprise operations of various types and open space and, other than the airfield, have little effect on Wallops CDAS.

The current land use within Wallops CDAS is primarily dedicated to satellite operations, satellite antenna sites, and RF/Electromagnetic Buffers. The Operations Building (operations, administration, and some support functions) is near the manned entry gate and masks the support buildings and most antennas behind it. Administration, maintenance, industrial, and supply/storage land uses are located directly adjacent to the satellite operations and satellite antenna sites.

The existing land use pattern at Wallops CDAS is efficient and effectively promotes operations. However, on site constraints limit the future capability of the station to support additional missions, as the small amount of developable real estate at Wallops CDAS does not support major expansion of antennas.



Future Land Use

- Administration
- Maintenance
- Satellite Antenna
- Satellite Operations
- Industrial
- Supply/Storage
- Out leased (GE AMERICOM)
- Open Space
- RF/Electromagnetic Buffer

Note: RF/Electromagnetic Buffer Area extends 360° beyond site boundaries

Wallops CDAS

The long-term expansion of mission capabilities at Wallops CDAS is dependent upon acquisition of additional real estate, either at the Wallops Flight Facility or other appropriate sites. These sites could support:

- Relocation of existing antennas
- Construction of new antennas
- Redistribution of antennas.

The use of remote sites for new antennas would maximize the development potential of Wallops CDAS for operational facilities.



Transportation

There is a very limited road system at Wallops CDAS. Entrance to the station is provided from Virginia State Highway 175. The unnamed entry road runs for approximately one-half mile around the end of the Runway 22 to the entrance of the station, then proceeds to the developed area, curving back to the entry through the station's main parking lot. It is classified as a hard surface, two-lane secondary road, but serves as the primary road on site. Two single-lane branches from this road lead to the remainder of the site and its antennas. Generally, the existing road network provides adequate capacity and access to the facilities and antenna sites at the station.

Of particular importance in the future, the road into the developed area should maintain force protection setback standards and promote supply deliveries and truck access and egress. In addition, the branch road or roads to the antenna sites must be widened to handle appropriately sized antenna maintenance and deployment vehicles.



Facilities Master Plan



Facility Assessment

The facility assessment, including general architectural, engineering, environmental, and safety aspects of Wallops CDAS facilities and its back-up site at Goddard Space Flight Center, is shown in the table below:

Facility Assessment Summary		
Assessment Area	Status	Comment
<i>Wallops Back-up Facility, Goddard Space Flight Center</i>	■	Cable raceway unsecured, inappropriate fire suppression system, some asbestos found
<i>Wallops CDAS Infrastructure</i>		
Pavements	■	Setbacks for parking lots from buildings should be increased
Storm Drainage System	■	Some corrosion found on metal buildings
Water System	■	Connection to municipal water system should be considered
Sanitary Sewer System	■	Location of leach field is in prime developable area; connection to municipal sanitary sewer system should be considered
Electrical Power System	■	There is insufficient redundancy based on proposed development
Fuel Storage	■	Fuel tanks meet all EPA requirements
<i>Individual Buildings</i>		
Operations	■	<ul style="list-style-type: none"> · All facilities have fire protection shortcomings · Most facilities are not ADA compliant · Lead-based paint and asbestos are present in some facilities · Hazardous materials are improperly stored · Some roofs are susceptible to high winds · There are isolated work place safety issues
Utility	■	
Machine Shop/Garage	■	
Logistics Storage	■	
Equipment Storage	■	
Antennas	■	There are hazardous material storage and LBP shortcomings
<i>Threat Assessment</i>	■	Parking lots are too close to facilities
■	Critical deficiencies	
■	Minor deficiencies	
■	No critical or minor deficiencies noted	

In general, Wallops CDAS facilities do not meet modern standards and are showing their age. There are health and safety shortcomings as well as facility efficiency and reliability issues.

Wallops CDAS

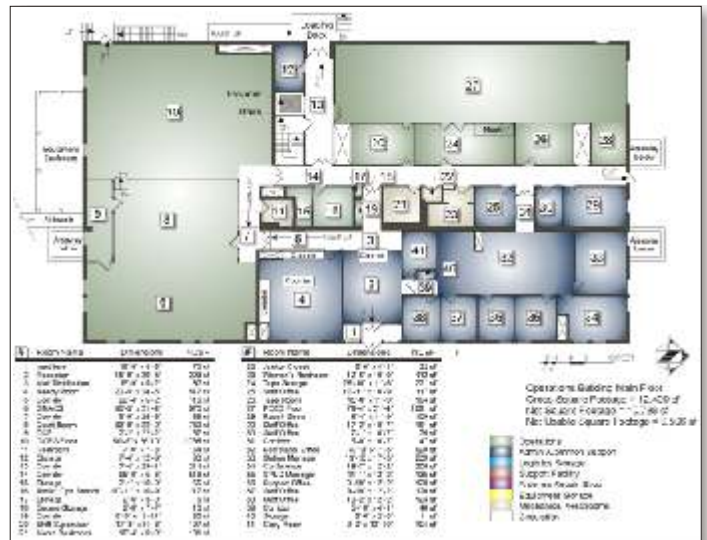
Facility Utilization

In conjunction with the Facility Assessment, existing documentation was reviewed and other data gathering activities were performed to:

- Obtain a clear understanding of the existing station layout and future development issues.
- Establish a space requirements baseline for development of alternative future layouts.

The study included the following principal elements:

- A field survey to identify existing facilities within the Wallops CDAS, to include their assigned operations and occupants, documenting all interior space, how that space is being used, the amount of space allocated to each organizational entity.
- An evaluation of the operational space requirements of station activities currently assigned to the Wallops CDAS and translation of those activity needs into facility space requirements.
- A determination of the adequacy of the existing buildings to meet the operational requirements.
- Application of space allowances by function and/or building using of standard criteria.
- Comparison of space allowances, space requirements, and existing space allocations (from survey and measurements).
- Generation of a range of options to overcome any operational space deficiencies identified.
- Development of a range of alternative actions (i.e., modifications and/or new construction, use of off-station facilities at other locations, or some combination of both).



Operations Building Main Floor Layout as found in the Facilities Master Plan

The Facility Utilization Survey determined that Wallops CDAS has a space deficit of almost 26,000 NSF as shown in the table below:

Space Utilization Survey				
Wallops CDAS Building Name	Required (R)	Existing (E)	E-R= +/- Difference	Comments
Operations	28,365	13,069	(15,296)	Space shortage primarily in Operations and associated functions (including OSDPD and international research space), selected admin space, and quality of life deficiencies
Utility	4,204	3,179	(1,025)	
Antenna Repair Shop/ Garage Building	5,961	3,840	(2,121)	Space shortage primarily Crafts Shop and vehicle maintenance and indoor parking
Equipment Storage	550	1,006	456	
Combined Logistics/Supply/ Storage/Issue space	13,091	4,755	(8,336)	Space shortage primarily in the general storage and issue areas
Total	52,203	25,849	(26,354)	

Facilities Master Plan



Facilities Master Plan And Capital Improvements

The development opportunities within the existing Wallops CDAS enclave are limited. Developable sites for facilities and new antennas include:

- The primary infill sites are located within the current station core, where most of the existing facilities are located.
- The SATAN and POLAR AUX VHF antenna sites will be available for development upon completion of the missions supported by these antennas. Once the antennas are removed, these areas adjacent to the station core can support limited development.
- The portion of the site north of the entrance on State Highway 175 is available for limited development, primarily for facilities that are best located outside of the secure perimeter of the station.
- The area where the 4 meter antenna was previously located could support a small facility, although no future facilities are presently planned at this site.
- The flat area presently owned by NASA northeast of the 26 meter antenna is also available for limited future development. This site is currently held in reserve against future facility needs.



Wallops CDAS

Major Recommendations

Additional Sites at Wallops Flight Facility (WFF). Approach NASA to lease three or four antenna sites, two operational facility sites directly adjacent to the Wallops CDAS site, and at least one site suitable for "redistributed operations" depending on specific mission needs.

Future Land Use. Expand mission-related land use districts and set aside development reserve areas within the station core and adjacent vacated antenna sites, when they are available.

Operational and Physical Security Enhancements (Force Protection/Anti-Terrorism). Modify current and future facilities, roads, and parking areas to meet standoff criteria and other physical criteria, implement current best practices in force protection/anti-terrorism planning, and modify operational practices to increase security.

New Facility Development. Construct a comprehensive set of replacement and expanded facilities that are intended to enhance mission capability, modernize the facility set, improve the fit between physical facilities and operations, and promote an image of architectural design excellence. The new construction program includes: OSDPD Operations Building, Shipping/Receiving Building, Operations Building Addition, Support Facility, Administration Facility, Combined Logistics/Vehicle Storage/Repair Support Facility, and Replacement Transmitter Buildings.

Facilities Revitalization. Renovate core mission facilities operations and utilities buildings to extend their usable lifespan, modernize the facilities, modify space utilization, and optimize building performance.

Facilities/Antenna Demolitions. Demolish the logistics buildings, antenna shop, and the SATAN/POLAR AUX VHF antennas to facilitate the redevelopment of the station core with infill development.



Facilities Master Plan



Infrastructure. Execute utility upgrade projects for water, sewer, communications, and electrical systems prior to facility development to provide capacity expansions, redundancy, and resilient system design. Designate utility corridors ("right-of-way" or easement) to support utility systems. Maintain utility corridors free of buildings and other vertical improvements. Reconfigure existing utilities and align new utilities within designated utility corridors as dictated by project requirements. Conduct detailed utility infrastructure master plan as a follow on to the FMP.

Transportation. Reconfigure the road network and parking to set aside the station core for mission facilities, provide force protection standoffs, and modify alignments and geometries to provide access for delivery vehicles where required.

Urban Design/Site Planning. Create a coherent high technology campus that reflects critical national infrastructure mission. Develop a pedestrian friendly campus that combines facility and landscape design excellence.

Architectural Design Excellence. Create an architectural image reflective of critical national infrastructure and scientific missions. Implement a consistent architectural theme through design guidelines that specify consistent forms, massing, and scale. Select a colors and materials palette for new construction and renovation projects.

Landscape Design. Connect urban design and architectural elements with landscape, streetscape, and pedestrian amenities within an identifiable theme. Select and locate landscape materials in compliance with airfield clearance criteria.

LEED (Leadership in Energy & Environmental Design) Certification. Ensure building designs, new and retrofitted, incorporate LEED measures to achieve a higher level of performance with respect to energy conservation and the environment.

Wallops CDAS

Compliance and Life Safety Projects

The compliance and life safety projects at Wallops CDAS are shown in the table below:



Building or Project	Description	Comments
Site-wide Asbestos Abatement	Includes floor tile and mastic, base cove mastic, 6-inch and 16-inch elbow insulation, elevator brake pads, boiler gaskets, non-conductive electric components, duct insulation	Opns Bldg, Utility Bldg, Antenna Repair Shop/Garage
Site-wide Fire Suppression	Installation of doors, closers, and seals to achieve fire separation; exit lighting; fire pull stations; installation of fire suppression system for buildings as well as point specific system for computer rooms	Opns Bldg, Opns Bldg, Antenna Repair Shop/Garage, Logistics Storage Bldg, Antenna Transmitter Bldgs
Opns Bldg	Removal of faulty insulation, light kits, doors, stairs, etc.; minor interior rework to include eye wash stations, storage cabinets, smoke detectors, and duct relocation; installation of new stairway and elevator; miscellaneous demolition	
Utility Bldg	Removal of various walls, windows, boiler, battery acid berm, and other items to prepare for new installation; installation of boiler, chilled water line insulation, and fuel oil pumps, replacement of fuel oil tank, installation of catch pan, and tie in with monitoring system; miscellaneous demolition	
Antenna Repair Shop/Garage	Removal of various walls, windows, boiler, and other items to prepare for new installation; installation of new storage mezzanine and access stairs; installation of fire-rated walls and associated items for welding shop; installation of new walls, doors, and storage room for tool crib; installation of unisex restroom and exit signs; repair of rain gutter; reskinning of building; repair of floor crack; and installation of emergency showers, battery charging room	
Logistics Storage Bldg	Installation of exit signs; replacement of garage door; reskinning of building; and installation of separate storage room	
Equipment Storage Bldg	Installation of explosion-proof fixtures, storage rooms for CFC recovery and flammables, exit signs, storage room berm; reskinning of building	
Antenna Transmitter Bldgs	Installation of exit signs, replacement of doors, reinforcement of walls and roofs, and waterproofing of structures	

Facilities Master Plan

Capital Improvements Phasing

The plan recommendations are phased as shown below:



Project Phasing

- 1 OSDPD Operations Building
- 2 Shipping/Receiving Building / New Gate House
- 3 Electrical/Communications Infrastructure Upgrades
- 4 Site Upgrades (Anti-Terrorism/Force Protection)
- 5 Demolish SATAN/POLAR AUX VHF Antennas
- 6 Operations Building Addition
- 7 Support Facility
- 8 Administration Facility
- 9 Renovate Operations Building (multiple increments)
- 9 Renovate Operations Building (multiple increments)
- 9 Renovate Operations Building (multiple increments)
- 10 Combined Logistics/Vehicle Storage/Repair Support Facility
- 11 Facilities Demolition/Construct Laydown Yard
- 12 Upgrade/Replace Transmitter Buildings

Wallops CDAS

Architectural Views



Revitalized Operations Building as seen from northeast



Revitalized Operations Building as seen from east



New Shipping & Receiving Building





